Update on fluorescence signal SW of source.

The rationale for the sampling sequence for this was cruise based on the hypothesis that the resumption in dispersant injection (ca. midnight May 18/19) would result in a new plume of dispersed oil at depth. We concluded that, based on fluorometry depth profiles, 5/19 samples probably tracked the remnants of the previous plume which moved in a southwesterly direction away from the spill site. Data gathered during the previous cruise indicated a vertical 'thinning' of that plume from between 1000-1400m to a narrower band between 1000-1100m. Yesterday's fluorescence measurements appeared to indicate that this trend was continuing. We detected a small fluorescence signal on the SW transect at respectively 8Km and 12Km from the spill site and an increase in fluorescence on a 15^{o} arc NE of the 12Km station. No fluorescence was present at the station occupied SE of the transect.

In an attempt to pick up a new plume, Sampling stations selected for 5/20 were closer to the spill site than the previous day. Modeling predictions and our own calculations indicated the probability of picking up a new plume on the SW transect at 4Km from the spill site. This was the first sampling station (B34) occupied at 0700 on 5/19. Contrary to expectations, only a small fluorescence signal was detected below 1100m. Subsequent samples were taken from the 1.7Km site (B35) and indicated a very small fluorescence trace. A third sample (B36) was taken due SW of the spill site at a distance of 1.5Km from the source showed a fluorescence signal between 1100 and 1300m in depth, although this was much smaller than the signal detected at this site on the previous 5/15 (B20) and 5/16 (B21). To further characterize this signal we opted to move to a point 1.5Km due south of the spill site. Data at this fourth station (B37) showed no apparent fluorescence signal at any depth.

Taken with the previous day's data from 12Km and 8Km along the SW transect, movement towards the spill site along this transect towards the source on 5/19 resulted in a diminished fluorescence signal that could represent the remnants of the deep water plume initiated by the previous dispersant injection episode. Attempts to pick up a new plume resulting from more recent injection indicated a much weaker fluorescence signal at depth than might have been expected.

Only one site (B36) 1.5 Km SW of the spill source showed a substantial fluorescence signature on 5/19 below 1100m, although this was much weaker than when the station was last visited on 5/17. This could indicate a change in direction or speed of the deep water plume or a decrease in oil flow due to more effective oil retrieval at the spill site. To further illustrate the apparently diminishing fluorescence signal SW of the source we have taken advantage of the fact that we have now visited this site five times in all (including today, 2/20 at 0715h) and are able to prepare a time-line for the fluorescence signal (and other parameters) vs. depth over the whole sampling period. This is illustrated in the accompanying figure. This could indicate a change in direction or speed of the deep water plume or a decrease in oil flow due to more effective oil retrieval at the spill site. It should be borne in mind that this is only a single site and we should be wary of drawing general conclusions from this site. Nevertheless, this is the closest we have so far to a benchmark 'reading' with a significant time component. We emphasize that these represent tentative observations from data collected from the sampling program so far.